

NORTH CAROLINA

Annual School Health Services Report

2007-2008



North Carolina
Department of Health
and Human Services

Division of Public Health

Women's and Children's
Health Section

Children and
Youth Branch

School Health Unit

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EXECUTIVE SUMMARY

North Carolina has the 10th largest public school enrollment in the country. The number of children in North Carolina public schools increased from 1.39 million in 2006-2007 to 1.404 million in 2007-2008, an increase of 1%. During the same period, the number of full-time school nurse positions increased from a full-time equivalence of 1,034 to 1,147 nurses.

School nurses in North Carolina are employed by a variety of agencies. Among the 115 school health programs, more than two-thirds (69%) were administered by school districts. The remaining third of the programs were administered by local health departments, hospitals, or a combination of all three. Funding for school nurse positions comes from a variety of sources including local and state funds, federal Title V block grants, categorical funds, and public and private foundations.

The ratio of school nurses to students improved from 1:1,340 in 2006-2007 to 1:1,225 this past school year. Over the past decade, the school nurse-to-students ratio has been cut in half, enabling more students to access health services from a school nurse. In August 1998, about 556 school nurses delivered services in 87 counties, carrying caseloads of about 2,450 each. Ten years ago, students in 13 counties had virtually no access to a school nurse. The American Academy of Pediatrics, the Centers for Disease Control and Prevention, and the National Association of School Nurses recommend a ratio of no more than 1 nurse per 750 students, to enable school nurses to deliver comprehensive health care to students.

The school nurse must be expert in clinical nursing; oral and written communication; utilization of epidemiological principles, including monitoring for clusters of symptoms that may indicate an emerging health threat for students and staff; educating the school community on current health topics; advocating for students; crisis management

North Carolina takes the position that health and education are interdependent; therefore the identification of health-related barriers to learning is crucial to the provision of an appropriate educational plan for every student. To meet that objective, North Carolina has instituted comprehensive school health services in every school district. Through strategies such as the N.C. Healthy Schools Coordinated School Health program, the N.C. School Health Leadership Assembly, through local funding and state funding directed toward school health services and personnel, and through implementation of a regional and state network of school nurse consultants, the state has made comprehensive school health services a priority.

and leadership. National certification in school nursing is the standard by which school nurses are judged to have the knowledge and skills necessary to provide health services in the school setting. In 2007-2008, the percentage of nationally certified school nurses in North Carolina decreased slightly, from 43% to nearly 41% of the school nurse workforce. This drop in percentage is reflective of the number of newly hired school nurses during 2007-08. Prior to obtaining certification, school nurses are encouraged to obtain at least a year of experience.

A critical function of school nurses is identifying students with chronic health conditions. The number and percentage of students with chronic health conditions continues to increase. In 2007-2008, school nurses identified 86,437 students with asthma, an increase of 3.5% — or nearly 3,000 more

students — from the previous year. There was little change in the number of students enrolled who had diabetes (4,316). Nearly 1,500 more students were identified with life-threatening allergies. In addition to identifying these students, school nurses develop individual health care plans and train school staff members to give necessary medications and perform medical procedures ordered by health care providers.

School nurses provided more than 65,000 health counseling sessions to students and staff, and more than 25,000 health education programs in group settings. They facilitated vision, hearing and dental screenings conducted in schools. Almost 30,000 students were seen by physicians or eye care professionals as a result of the referrals for comprehensive eye exams.

Nurses were authorized to process more than 30,000 orders for medication, and school nurses ensured that this was done in a safe manner.

School nurses work with their local School Health Advisory Councils to develop and implement local programs designed to prevent illness and promote health that are mandated by the North Carolina State Board of Education Healthy Active Children policy. They also assist with disaster/emergency planning for their communities.

As the health needs of children in school continue to grow, so must the availability of school nurses, until the recommended ratio of 1:750 is reached and, ideally, there is a school nurse in every school in North Carolina.

Methodology

This report is compiled from data submitted by school nurses, based on their knowledge of health services provided by school nurses and other health professionals in their schools. Information is on health services in North Carolina Public Schools only. It does not include data from state charter, residential, federal, private or parochial schools.

Data specialists and school nurse consultants in the N.C. Division of Public Health's Children and Youth Branch developed the survey instrument and distributed it to School Health Program Supervisors in each school district (LEA: Local Education Agency) at the start of the 2007-08 school year. All LEAs — 100% of 115 — participated in the data collection and submitted data onto the survey instrument via electronic format. The data was sorted by branch staff and analyzed by staff in the School Health Unit of the Children and Youth Branch.

Additional data for this report is collected from other sources, including:

- North Carolina Department of Public Instruction
- North Carolina Department of Health and Human Services, Division of Public Health, Women's and Children's Health Section and Oral Health Section
- The National Society to Prevent Blindness North Carolina Affiliate, Inc.
- Governor Easley's Initiative for Child and Family Support Teams

Additional data is available for further review by request. Contacts:

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DATA SOURCES

- ¹ N.C. Annual School Health Nursing Survey: Summary Report of School Nursing Services 2007-2008, N.C. Division of Public Health, Department of Health and Human Services and Public Schools of North Carolina, Department of Public Instruction

INTRODUCTION

For nearly a dozen years, the North Carolina Division of Public Health has collected school health data from each school district. This report summarizes current data and provides information on trends.

The survey to the school health service programs also asks for comments regarding successes during the past school year and goals for future years. Nearly all of the LEAs provided a number of “success stories,” and in this year’s report, we include a small selection of these stories.

SURVEY POPULATION

Profile of Students Enrolled in North Carolina Public Schools

North Carolina’s 1.4 million school children are as diverse as the state’s population. They come from all socio-economic backgrounds and an increasing number of ethnic backgrounds. The majority are male (51%) and white (55%). Other racial and ethnic populations in our schools are: black or African American, 31%; Asian, 2%; Hispanic, 10%; American Indian, 1.4%; other or not known, 0.6%. They attend our 2,354 schools in 115 educational districts, 100 districts organized by county and 15 by city. An additional 30,892 students attend one of the 98 N.C. public charter schools.

Pre-kindergarten (Pre-K) Students

Increasing numbers of pre-K students are enrolling in North Carolina’s public schools. These are in addition to the preschool age children who receive Exceptional Children’s services. The state fully or partially funds more than 600 regular education pre-school programs serving children who are identified as being at risk for school failure. Many of the students in these programs are developmentally delayed, have disabilities, and/or have special health care needs. School nurses serve these students in addition to those in grades K-12. Pre-K membership numbers are not included

in reports of Average Daily Membership and are not included in the formula that results in the annual school nurse to students ratio, yet the care of Pre-K students impacts the daily work of school nurses in a number of important ways. Since parent involvement is an important component of these preschools, also known as Title I preschools, school nurses seize the opportunity to educate parents on health promotion and halting or slowing health concerns of many of these children. During this school year, they reported serving 32,656 pre-K students enrolled in their school districts.

SUCCESS STORY

“Two school nurses presented at the Smart Start National Conference on the use of the kindergarten health assessment by schools.”

Exceptional Children

More than 13% of the public school children in North Carolina are enrolled in Exceptional Children’s (EC) Programs. A small percentage of school nurses, less than 3%, work only in the EC program. In addition to these school nurses, private duty nurses may contract with insurance providers or LEAs to assist medically fragile students one-on-one during the school day. During this past school year, 17 LEAs reported such arrangements.

Students in the EC program require the assistance of school nurses, as many of them have additional conditions requiring health care plans, emergency plans and other health accommodations. For 26,000 of these students, their primary disability is “Other Health Impairment.” School nurses also are involved with the more than 6,000 students classified as “Traumatic Brain Injured,” “Severe and Profoundly Handicapped,” “Hearing Impaired,” “Orthopedically Impaired,” and “Multi-Handicapped.” With each student who has a chronic health condition, the school nurse is involved in planning, delegating and otherwise caring for the student.

Profile of Nurses Employed in N.C. Public Schools

The school nurse is a registered nurse (RN) in a specialized professional practice that requires different educational preparation, experiences, skills and knowledge than that of nurses working in acute care or other community settings. The American Academy of Pediatrics has affirmed that the school nurse has a crucial role in the seamless provision of comprehensive health services to children and youth.² In the Academy's position statement of May 2008, it states that increasing numbers of students enter schools with chronic health conditions that require management during the school day. School nurses provide preventive services, early identification of problems, interventions, and referrals that serve to improve health and educational outcomes. In North Carolina, the school nurse often functions as a member and occasionally as the coordinator of the local School Health Advisory Council. School nurses are involved in each of the eight components of a Coordinated School Health Program: health services, health education, physical education, nutrition services, health promotion for staff, counseling and psychological services, healthy school environment, and family/community involvement.

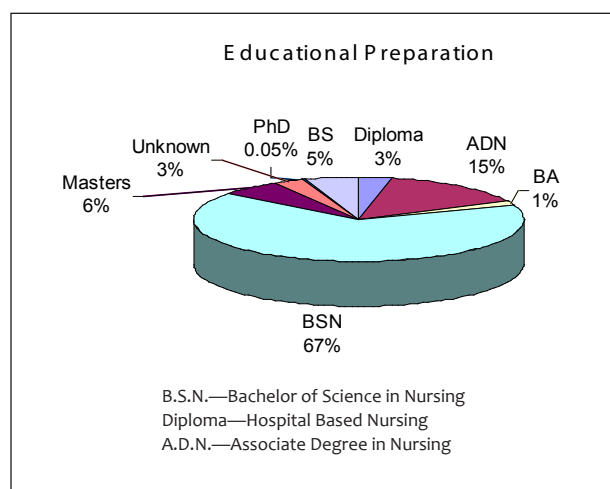
SUCCESS STORY

"We consider receiving funding for another school health nurse to have been critical to our success for the year. We have better documentation, improved screening, standardized forms, and we have been able to provide better service to students with the additional nurse."

² American Academy of Pediatrics: Policy Statement "Role of the School Nurse in Providing School Health Services" May 2008

Educational Preparation of School Nurses

School nurses are registered nurses (RN) who are licensed by the North Carolina Board of Nursing. Educational preparation for entry into registered nursing is through one of three routes: hospital-based diploma in nursing; community or technical college preparation for an associate degree in nursing; or bachelor's degree from a four-year college or university. Increasingly, nurses whose initial entry into registered nursing was at the diploma or associate degree level have seen the need for more educational preparation and have completed bachelor's degrees in nursing or other health-related fields. School nurses must have the expertise required to meet increasingly complex health needs and the skills and education to provide for the comprehensive range of services that school children require. National and state leaders promote the baccalaureate degree as minimum requirement for professional school nursing.³ In North Carolina, nearly 80% of school nurses report holding a baccalaureate degree or higher.



School nurses in North Carolina obtain continuing education activities offered through the nine regional Area Health Education Centers (AHECs), through a number of Colleges of Nursing, and

³ American Academy of Pediatrics: Policy Statement "Qualifications and Utilization of Nursing Personnel Delivering Health Services in Schools (RE7089)."

through a network of state and regional school nurse consultants within the N.C. Division of Public Health. New school nurses attend a two-day orientation session held regionally across the state in addition to orientation offered by their school district, health department or hospital employers.

SUCCESS STORY

“We improved immunization status as a result of increased record audits, use of the NCIR and a new procedure related to notification of when a new student is enrolled.”

National School Nurse Certification

The Department of Public Instruction requires that all school nurses hired by LEAs after July 1, 1998, hold national school nurse certification. Non-certified nurses hired after this date may be employed but must achieve certification within three years of date of employment. School nurses not employed by LEAs are encouraged to, and in some cases required to, through their funding partners, obtain certification as a mark of achieving this increasingly recognized standard. Currently, 41% of North Carolina nurses working in public schools hold national school nurse certification from either (or both) of the national certifying bodies: the American Nurses Credentialing Center (ANCC) or the National Board for Certification of School Nurses (NBCSN). During the 2007-2008 school year, nearly half (49%) of the school nurses were within their first three years of employment in school nursing. A small number met degree and certification requirements upon hire; most continue to work, attend college, and study in order to meet the requirements.

Ratio of School Nurse to Students

The national recommendation for the school nurse-to-students ratio is 1:750 for general student population; 1:235 for schools in which the student population may require daily professional school

nursing services or interventions; and 1:125 for students with severe and profound disabilities and complex health care needs.⁴ Those are the ratios that would allow all students to have their health needs safely met while in the school setting, including appropriate preventative, health promotion, early identification and intervention services.

For this report, school nurse-to-students ratios were based on full-time equivalencies (FTEs⁵) of positions budgeted for school nurses to work in local education agencies (LEAs). School nurses working solely as administrators, without caseloads of students, were not counted in the FTE or ratio. Using that definition, there were 1146.51 FTE budgeted school nurse positions during the just-completed school year.

SUCCESS STORY

“Our community forum, created to look at priorities, chose school nurses their number-one priority for children.”

The school nurse-to-students ratio varies widely across the state. At the end of the 2007-2008 school year, the statewide average ratio of school nurse to students was 1:1,225. Thirty-nine LEAs met the target ratio of 1:750, an increase of 8 more LEAs over the previous school year. The ratios during the 2007-2008 school year ranged from 1:293 in Pamlico County to 1:3,412 in Davidson County. For a breakdown of school nurse-to-students ratio by LEA, see Appendix C, page 25.

⁴ National Association of School Nurses, Position Statement, Caseload Assignments, Adopted 1972, Rev. 2006; See also CDC Healthy People 2010

⁵ FTE = Full Time Equivalency for school nurse positions (37.5 or more hours/week=1.0 FTE)

Student Population, School Nurse Staffing, and Nurse-to-Students Ratios

Number of:	School Year 2003-2004	School Year 2004-2005	School Year 2005-2006	School Year 2006-2007	School Year 2007-2008
LEAs	117	115	115	115	115
Schools	2,186	2,182	2,227	2,338	2,354
Students	1,311,163	1,332,009	1,363,695	1,386,363	1,404,957
School Nurse FTEs	691.11	836.06	867.86	1,034	1,146.51
Average N.C. School Nurse/ Students Ratio	1:1,897	1:1,593	1:1,571	1:1,340	1:1,225

Employers of School Nurses

School nurses are primarily employed by their local education agencies (LEA). The administrative responsibility for almost 70% of school health services programs in North Carolina lies within the LEA. The chart below shows the yearly increase in North Carolina public school nurses in the past five years. A relatively small number of school nurses are employed part-time.

Number of Individual School Nurses (including part-time nurses)

	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
School Nurses	768	903	932	1,083	1,266

Administrative Responsibility for School Nursing Services

Fiscal Agent	Percent of school districts (LEAs)
Local Education Agency (LEA)	69%
Health Department	14%
Hospital/ Health Alliance	2.5%
Funding from a combination of sources	14.5%

Funding for School Nurses

Although the local school board, or LEA, is the primary employer of North Carolina school nurses, the money for school nurses comes from a wide variety of sources. Rarely is the entire school health services program funded through a sole source. Funding sources include: local tax revenue, property taxes allocated to the local school and local health department; state appropriations, such as through distributions from the state Department of Public Instruction and state Division of Public Health; federal reimbursement, including approved Medicaid expense reimbursements or federal Title V grants and categorical funds; hospitals; health care organizations and private foundations.

In recognition of the enormous health needs of school-age children and the relationship between health and academic success, the North Carolina General Assembly has appropriated funds through the School Nurse Funding Initiative (SNFI), which began in the 2004-05 school year. These funds are distributed by the Division of Public Health to local health departments, local education agencies, and hospitals employing school nurses.

In 2006, Governor Michael Easley added 100 school nurses as part of Child and Family Support Teams in the schools. The initiative provides recurring state funds to team 100 school nurses with an equal number of school social workers at 103 schools in 21 school districts across the state. The purpose of the Initiative is to provide school-based professionals to screen, identify and intervene for children who are potentially at risk of academic failure or out-of-home placement due to physical, social, legal, emotional or developmental factors.

Through these state and local efforts to increase funding for school nurses, the number of LEAs meeting the recommended ratio of 1:750 nearly quadrupled between the 2003-2004 and 2007-2008 school years, increasing to 39 from 10 only four years ago.

Student enrollment in North Carolina public schools increased this past school year by 18,594. The labor demand for all nurses, including qualified school nurses, has grown rapidly in recent years. School health program supervisors, 50 of whom are registered nurses, re-doubled efforts to attract and retain school nurses. In this past school year, they succeeded in filling 97% of all school nurse positions.



SCHOOL HEALTH SERVICES

School nurses provide basic and comprehensive school health interventions to all children in the population served, including children with special health care needs resulting from acute and chronic complex medical conditions.

SUCCESS STORY

“We had one student meeting with the school nurse one-on-one. Through educating the student regarding peak flow meter and the disease process, the student had: increased attendance, decreased emergency visits, increased awareness of asthma in the class, and increased confidence in her ability to control her asthma.”

Chronic Health Conditions

An increasing number of students with chronic health conditions attend school. Since these conditions can affect attendance, school performance, and the student's level of well-being, school nurses work closely with students, their families, health care providers and school staff to reduce the negative impact of illness on learning. Nurses serve as case managers, evaluate activities of daily living, and develop appropriate modifications for the learning environment. The percentage of public school students with chronic health conditions has risen almost every year for the past decade. The number and percent of students with reported chronic health conditions are illustrated in the table below.

For a more extensive list of the types of chronic health conditions that were managed at school, see Appendix A, page 23.

Asthma, a major chronic illness among school age children, is the leading cause of school absenteeism, according to most national surveys. Nurses from all 115 LEAs reported:

- 86,437 students are reported to have asthma (an increase of nearly 3,000 students over the prior school year),
- 53 LEAs have asthma education programs for students and/or staff,
- An additional 1,267 students this past school year, as compared to the previous year, practiced peak flow monitoring during the school day.

Number and Percent of Students with Identified Chronic Health Conditions

School Year	Number and Percent
97-98	78,387 (6%)
98-99	95,035 (8%)
99-00	114,765 (9%)
00-01	131,589 (11%)
01-02	129,329 (10%)
02-03	121,877 (10%)
03-04	161,559 (12%)
04-05	197,052 (15%)
05-06	209,718 (15%)
06-07	227,940 (17%)
07-08	237,245 (17%)

In response to rising rates of childhood diabetes and increasingly complex needs related to school-day management of diabetes, nurses train staff to care for students with diabetes. School nurses, as well as diabetic care managers, a school function established by the General Assembly in 2003, shared responsibility for a reported 4,316 students with diabetes. Students with diabetes are encouraged to self-manage their symptoms, which will most likely last their lifetime. School staff members assist students as needed. Among the students with diabetes:

- 3,677 monitor blood glucose at school
- 2,104 receive insulin injections at school
- 1,588 manage insulin pumps
- 2,467 are known to self-carry their medication

SUCCESS STORY

“We had a middle school student who was having problems with hypoglycemia. Working with the parent, student, and nurse practitioner, we developed a plan. The student no longer had episodes of hypoglycemia.”

School-based, School-linked Health Centers

Adolescents, who are often less likely to see a physician for routine check-ups, in some school districts have access to medical care on the school grounds or nearby. In this past school year, almost eight percent of North Carolina’s adolescents in public schools had access to practitioners including medical doctors or certified nurse practitioners at a school health center. Different from the school nurse office, these centers provided 85,092 clinical and counseling services to students, from immunizations to nutrition and mental health counseling. Access to these centers is limited to those with parental permission, and the centers provide clinical services during the school day, limiting the out-of-school time required for these preventive and treatment services. Twenty-eight state-supported school centers use limited funding to leverage additional resources at the local level. Partners in these centers include N.C. Department

of Public Instruction, families, N.C. Division of Medical Assistance, private medical practices, local health departments and the N.C. School Community Health Alliance (NCSCHA). In all, there are 52 school health centers across the state.

Pregnancy

School nurses again reported an increase in the number of known pregnancies this past school year, from 4,422 in 2006-2007 to 4,904 in 07-08. This number reflects an increase of 482 over the previous year, which was itself an increase of 350 over the prior year. The percentage increase was greatest in elementary grade levels (55%) although the absolute number is relatively low, with a slight dip among middle school females and a rise of 12% among high school females. Although the majority, more than 70%, managed the pregnancies well enough to remain in school during normal school hours, some students, either in the prenatal or postpartum period, received home-bound instruction for a time during their pregnancy.

SUCCESS STORY

“After seeing from our report last year that 50% of our pregnant teens dropped out of school, we decided we must do something to help this situation. We established a teen pregnancy care/support team that met regularly with the pregnant students for support.”

Status of School Enrollment for Students Known to be Pregnant

	Elementary	Middle School	High School	Total
Known pregnancies	14	409	4481	4,904
Students receiving homebound instruction due to pregnancy	0	113	1,283	1,396

School Year	Pregnancies reported to school staff	% increase or decrease from previous year
1996-1997	2,089	N/A
1997-1998	2,830	35%
1998-1999	2,721	4% decrease
1999-2000	3,316	22%
2000-2001	2,914	12% decrease
2001-2002	2,919	0.1%
2002-2003	2,697	7.6% decrease
2003-2004	3,131	16%
2004-2005	3,406	9%
2005-2006	4,072	20%
2006-2007	4,422	9%
2007-2008	4,904	11%

Suicide and Homicide

Intentional death of students is a public health concern. In North Carolina schools this past year, according to reports from the LEAs, 22 public school students died through homicide, a significant 46% increase from the prior year. Although the number is small by comparison with the adult population, the loss of a student through homicide or suicide is a traumatic event for the entire community. Suicide was reported to be attempted by 455 students, an increase of 23% (from 370) from the prior year. There were significantly fewer deaths by suicide, however, a drop of 8 (36%) from the 30 in 2006-07. None of the deaths, either by suicide or homicide, occurred at school.

SUCCESS STORY

“Our major success is the overall effectiveness of our school nurse team. We strive to improve our students’ academic success by addressing their physical and medical needs. We keep a great line of communication with each other, enabling us to give continuous feedback.”

Death by Suicide/Homicide: School Year 2007-2008

	Elementary	Middle School	High School	Total
Deaths from suicide	0	4	18	22
Suicides occurring at school	0	0	0	0
Death from homicide	8	7	7	22
Homicides occurring at school	0	0	0	0

Known / Reported Suicide Attempts: School Year 2007-2008

	Elementary	Middle School	High School	Total
Attempts by grade level	28	176	251	455

Student Tobacco Use

Effective Aug. 1, 2008, all schools must adopt, implement, and enforce tobacco-free⁶ school campus policies. In addition to state law and school policy, schools communicate tobacco-free messages to young people through health education programs, social marketing messages, cessation classes for students or staff, and through the day-to-day modeling and interactions among staff and students.

School nurses also offer classes and programs to reinforce restrictions against smoking and to encourage cessation. Perhaps reflecting a decreased tolerance of tobacco use among under-age students, fewer LEAs now offer “alternative to suspension” programs (in lieu of suspension) for violating school rules against tobacco use. Fewer than 10% now offer such alternative programs, as compared to nearly half last year.

Health Counseling

According to a survey completed by school nurses attending the North Carolina School Nurse Conference in October 2007, students contact the school nurse for answers to questions ranging from normal growth and development to serious emotional and mental health concerns requiring referrals to mental health professionals. As the table below illustrates, **school nurses provided more than 65,000 individual health-counseling sessions.**

SUCCESS STORY

“81% of students seen by the school nurse [for injury or illness] remained in school [rather than being sent home].”

Individual Health Counseling Sessions

Counseling Topic	Elementary	Middle	High	Total
Child Abuse/Neglect	1,991	609	541	3,141
Depression/Suicide	1,037	3,323	4,635	8,995
Grief/Loss	1,159	1,405	1,619	4,183
Pregnancy	54	1,400	8,200	9,654
Puberty/Hygiene/ Reproductive Health	10,859	7,539	9,410	27,808
Substance Abuse	90	806	1,765	2,661
Tobacco Use	169	991	2,423	3,583
Violence/Bullying	2,176	2,017	1,476	5,669
Total	17,535	18,090	30,069	65,694

⁶ School policy totally prohibits tobacco use for all students, staff, and visitors in the school buildings and extends to the entire campus, vehicles, and all school events including outdoor events. The policy extends to hours after regular classroom schedules, 24 hours a day, seven days a week and includes off-campus, school-sponsored, student events.

Health Teaching

School nurses were involved in a variety of health teaching and instructional sessions to groups and classrooms. Classroom instruction included such topics as hygiene, first aid, wellness and fitness promotion, Open Airways and other asthma management programs, AIDS peer education, smoking prevention and cessation, violence prevention, puberty, prenatal and parenting programs. Instruction to faculty and staff included the topics of medication administration, infection control, OSHA blood-borne pathogen regulations, CPR, first aid, and chronic disease management, including general and intensive training for the care of students with diabetes. The nurses also conducted health fairs and made presentations to parent organizations, school boards, and civic and community groups. All in all, the nurses reported providing **25,871 programs and presentations** during the 2007-2008 school year.

The parents of these children also depend on school nurses for health guidance and assistance with minor childhood illnesses and injuries. During the

SUCCESS STORY

“Our teen pregnancy prevention education resulted in a 57% decrease in pregnancy rate from last year.”

2007-2008 school year, nurses evaluated at school more than **172,734 student injuries and acute illnesses that had originated outside of school**. In addition to providing care and guidance, nurses assist families by locating medical and dental resources and referring students to these providers for the diagnosis and treatment of a wide variety of health problems.

Health Care Treatments and Procedures at School

Some students with chronic illnesses, physical handicaps and/or disabilities require health care procedures to be performed during the school day. The nurses reported processing orders for at least **24,163 individual medical treatments or procedures, including those in the table below:**

Number of Specified Health Care Procedures

Health Care Procedure	Total
Central Venous Line	48
Diastat (rectal diazepam [Valium®])	1,134
Glucagon Injection	2,330
Nebulizer Treatments	1,910
Shunt Care	167
Tracheostomy Suctioning & Cleaning	102
Tube Feeding	553
Use of Epi-pens	8,871
Bladder Catheterizations	348

On top of last year's 20% increase in the number of orders for injectible epinephrine (Epi-pen®) and a 9% increase in the number of orders for injectible glucose (Glucagon®), this past school year there was an additional 15% increase in the number of orders for use of epinephrine and 22% increase in orders for the use of Glucagon®. More than 1,000 students with intractable seizures had orders on hand for administration of Diastat® (commonly known as rectal Valium®).

SUCCESS STORY

“We utilized a system-wide program for disaster preparedness, including usage of red backpacks with First Aid symbol for every classroom, creating a unified method for storage of emergency action plans and medications for students.”

Medicating Students

Administration of medications to students by school staff is a serious responsibility requiring conscientious attention to giving the correct medication in the correct dose to the correct student every time. Secretaries, classroom teachers, and teacher assistants are primarily the school staff members who administer routine medications on a daily basis in the majority of school systems in North Carolina. To ensure that school staff perform this task with safety and accuracy, it is essential that a school nurse be available to review and participate in the development of school policy and procedures; train and supervise teachers and other staff about all aspects of giving medications correctly; and serve as coordinator among parents, medical providers, and the school. In nearly all of the LEAs, school nurses provided formal training programs for school employees who were designated to administer medications. They also conducted periodic audits of medication charts and records

to assure compliance with all physician and parent orders and to assess the students' responses to medication therapy.

During the 2007-2008 school year, nurses reported that 30,433 students received daily medication while at school. Some received medication daily on a long-term basis (21,182), others for a shorter duration (9,251). Medications received most frequently on a daily basis included: Ritalin®, Dexedrine®, Lithium®, and other psychotropic, controlled substances.

An additional 39,985 medications were ordered for “standby” as needed for emergencies. Emergency drugs included rescue asthma inhalers, rescue medications for diabetes such as Glucagon®, anti-seizure medications such as Diastat®, orders for severe allergies including injections of epinephrine, and medications for migraine (such as Imitrex®, Maxalt®, Phenergan® and Tylenol #3®).

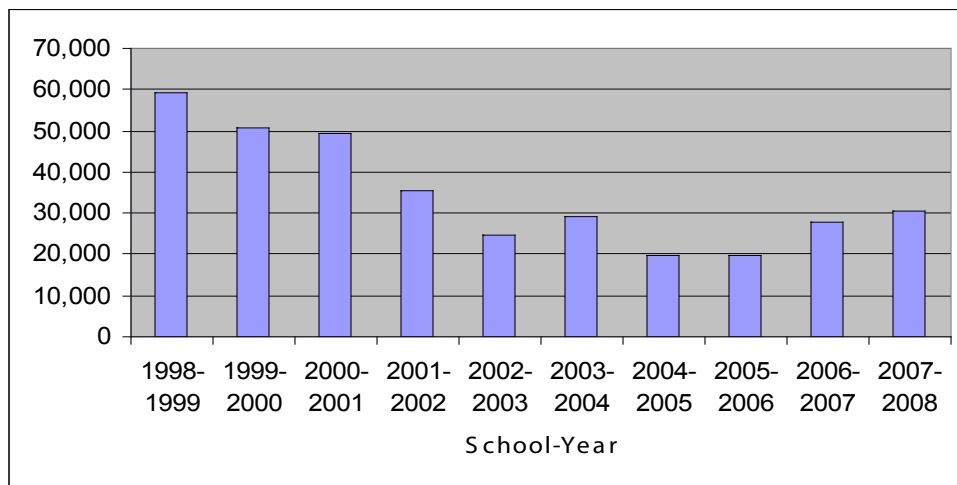
Since a number of over-the-counter drugs can cause side effects or mask serious illnesses or conditions, state recommendations are to discourage unlimited use of non-prescription medications for school children and require not only parental authorization but also medical provider authorization for any medications given in school during the school day, whether or not a prescription is required for the product. Over-the-counter drugs given in some school districts include antihistamines such as Claritin® and Benadryl®, pain relievers such as Advil® and Tylenol®, anti-acids such as Tums®, sunblock products, cough drops and others.

The following table and graph provide a 10-year overview of the numbers and percentage of students receiving medications as reported by school nurses. There is a notable decrease in numbers of daily medications during this decade, by nearly 50%, even during periods of increasing enrollment. This drop can be attributed to a change in dosage from short-acting to longer-acting formulas for a variety of conditions. This change has held steady over the past few years.

Number and Percent of Students Receiving Medications Administered at School

School year	# Students	Daily Medications
1998-1999	1,226,748	59,048 (5%)
1999-2000	1,237,794	50,554 (4%)
2000-2001	1,243,442	49,303 (4%)
2001-2002	1,271,995	35,319 (3%)
2002-2003	1,279,468	24,477 (2%)
2003-2004	1,311,163	29,321 (2%)
2004-2005	1,332,009	19,541 (2%)
2005-2006	1,363,695	19,772 (1%)
2006-2007	1,386,363	27,990 (2%)
2007-2008	1,404,957	30,433 (2%)

Number of Students Receiving Daily Medications at School



Health Care Coordination and Case Management

The school nurse's role often extends beyond the school setting. Children with chronic or serious acute illnesses and conditions often require frequent daily nursing interventions and case management to enable them to remain in school. School nurses utilize a variety of strategies to communicate with all those involved in the care of a student. Nurses

serve as liaisons with physicians, dentists, community agencies, and families while supporting and caring for the health needs of students. Among the strategies school nurses enlist to provide health care coordination and case management is making visits to the homes of students. More than **12,345 home visits** were conducted during the 2007-2008 school year to assist families with student health issues. This number reflects an increase of nearly 2,000 home visits.

SUCCESS STORY

“School nurses began data collection on case management of five students with asthma that had 10 or more missed days of school during the previous year. The overall results proved an increase in both attendance and academics for this group.”

Case management has been found to be a useful model through which to coordinate a student’s health care. In 21 (18%) of the school districts, the process has been formalized into a Case Management Program with core components of assessment, health care management, community resources and support, psychosocial intervention, and documentation and evaluation. In other LEAs, case management is part of the Child and Family Support Team program or the school nurse conducts case management individually. Regardless of the model used, coordination of care of a student with special health care needs serves to increase a student’s ability to manage the condition in school, with a goal of increased educational achievement and improved health outcomes.

SUCCESS STORY

“One of the accomplishments that we are most proud of is our Care Team approach to students. We have a better approach to referrals outside of school, and we have significantly reduced absenteeism and drop-outs in our county.”

Emergency Care

Injuries and illnesses are common occurrences in the school-aged population. Because the majority of school nurses cover more than one school building, few schools have a school nurse on duty during the entire school day. Therefore, school

nurses must assure that school personnel are trained to provide first aid in emergencies. **61%** of the LEAs reported having First Responders available daily in each school building.

Many minor incidents occur to students and staff during the course of the school day and are often handled by teaching and office staff. School nurses are frequently required to assist with major injuries, of which there were more than 22,000 this past year. Serious injuries are defined as medical emergencies requiring an Emergency Medical Service (EMS) call or immediate medical care plus the loss of one-half day or more of school.

Of the serious injuries reported, most (27%) occurred on the playground. Another 21% occurred in physical education classes and 19% in the classroom. For a complete breakdown of type and place of injury, refer to Appendix B page 24.

There were adverse outcomes for some of the students with serious injuries that occurred at school. Twenty-two students were permanently disabled, and one died of the injury. Fewer of the injuries involved law enforcement; 821 this year compared to 1,081 in school year 2006-2007.

Health Screening, Referral, Follow-up, and Securing Care

Voluntary mass screenings by grade or school are often conducted with the assistance of trained volunteers or other health professionals (example: audiologists, dental hygienists, and speech/language pathologists).

Dental screenings, referrals and follow-up are provided by N.C. Division of Public Health Oral Health Section (OHS) public health dental hygienists with assistance on follow-up to referrals by school nurses. In spring 2007, the school-based fluoride mouthrinse program resumed and the 2008 Legislature appropriated additional funds so more children could be served. Statewide, during the 2007-08 school year, the OHS screened 188,000 children and helped about 12,400 children get

needed dental care. OHS staff provided 11,600 dental sealants to school children at high risk for tooth decay. The Centers for Disease Control and Prevention promotes community fluoridation and school-based dental sealant programs as the two most effective public health measures to reduce dental decay.

SUCCESS STORY

“A student was not doing well in school, and the nurse checked the student’s vision and hearing. Referrals were made and the student received needed services. The student’s grades improved.”

Vision screenings are conducted by school nurses as well as by other school staff and volunteers. School nurses follow up on those referred for vision examination and in many cases are the persons who locate sources of free care for those unable to afford treatment.

Significant numbers of students who were referred to a dentist or doctor based on the screening process did not or were not able to secure that care from a health professional. Additional staff, to provide appropriate follow-up and care management services for students, may reduce this gap in the completion of the screening process. In some situations, securing additional health care providers may also reduce the gap.

SUCCESS STORY

“Students and staff secured the care of a physician, dentist or optometrist 851 times as a result of the school nurses’ interventions.”

In response to a number of recent reports indicating that North Carolina has the 5th highest rate of overweight and obese youth, 25 school districts have instituted system-wide screening for overweight by measuring height and weight and obtaining the Body-Mass Index (BMI). These screenings are conducted in a variety of settings: health fairs, physical education classes, or routine collecting of height and weight data. In some cases the screenings are conducted in collaboration with other health partners. The total number of students screened for BMI in North Carolina public schools remained small, at less than 3% of the school population; less than 10% of those students received referrals for either overweight or underweight, and an estimated 4% actually completed the referral by receiving an evaluation from a qualified medical provider.

Within the LEAs that conducted mass screening for BMI, nearly one in 10 students were referred for further evaluation. Only 4% of those referred actually received further evaluation. Data from 2007-08 does not distinguish between referral for overweight or underweight.

The following table shows the results of some of the mass screening projects that were conducted during the 2007-2008 school year.

Number of Students Screened

Screening	Screened	Referred	% Referred	Secured Care	% Secured Care
Blood Pressure	21,209	505	2%	354	70%
BMI	33,556	2,980	9%	128	4%
Dental	188,000	32,650	17.4%	12,400	40%
Hearing	146,217	4,188	3%	2,776	66%
Vision	518,580	40,882	8%	29,733	73%



HEALTH POLICIES

Policies are essential to guide the development and implementation of coordinated school health programs. All local health departments in the state develop an agreement, the Memorandum of Agreement (MOA), with each school district in their jurisdiction. These MOAs are locally developed and provide an avenue for collaboration on school and health policies and procedures.

School policies guide school nursing practice, provide parents a consistent method of communicating those policies, and provide

SUCCESS STORY

“The Tobacco-Free Schools policy passed [ahead of the legal deadline for Aug. 1, 2008]. This was a result of nurses’ persistent efforts on the SHAC (School Health Advisory Council).”

students and staff assurance of health and safety. School nurses cited the presence of written, school board approved policies in the key areas listed in the table below:

Health Policy	% of LEAs with board approved policy
Medication Administration	99%
Prevention/Control of Communicable Disease	98%
Provision of Emergency Care	83%
Screening, Referral and Follow-up	57%
Maintenance of Student Health Records	64%
Identification of Students with Acute or Chronic Health Care Needs/Conditions	60%
Non-school Bus Transportation for Students with Health Care Needs	39%
Special Health Care Services (SBP HSP-G-006.0402)	83%
Standing Orders	26%
Response to Do Not Resuscitate (DNR) Order	26%



COMMUNITY INVOLVEMENT IN SCHOOL HEALTH SERVICES

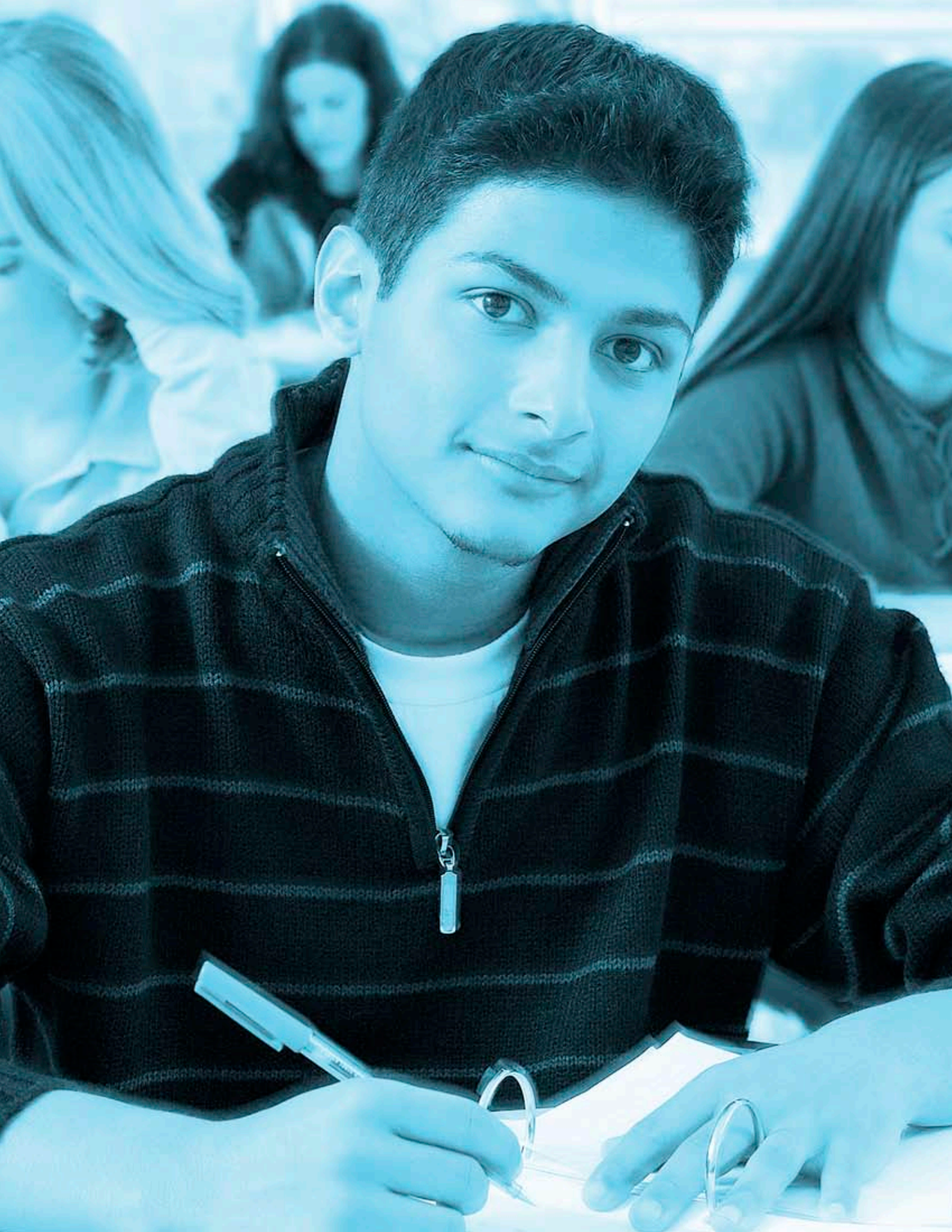
Community involvement contributes to the quality and effectiveness of school health programs and services. School nurses encourage and promote community involvement through:

- establishment of school health advisory councils,
- development of inter-agency planning and written agreements,
- recruitment of local physician advisors, and
- development of parent-teacher (PTA/PTO) health subcommittees.

All of the local education agencies reported having School Health Advisory Councils (SHACS). Sixty-nine SHACS have physician advisors for their school health programs. Of those, 30 are pediatricians, 24 are family practice physicians and 14 work in other specialty areas or are retired.

CONCLUSION

School health services are just one component of the school experience, but through collaboration with multiple partners in health and education, school nurses work to positively impact the full range of experiences students encounter. By working with the North Carolina Division of Public Health, North Carolina Division of Medical Assistance, North Carolina Department of Public Instruction, the North Carolina Pediatric Society, the North Carolina Dental Society, Prevent Blindness North Carolina, the North Carolina School/Community Health Alliance, and many others, school nurses help students achieve at levels they might not otherwise achieve. As the number of school nurses in this state increases, it is expected that school nurses will demonstrate increased positive impact through improvements in student attendance, health and academic outcomes.



Appendix A: Chronic Health Conditions, School Year 2007-2008

Condition	Elementary	Middle	High	Total
ADD/ADHD	28,704	14,309	10,964	53,977
Addison's Disease	3	8	27	38
Allergies (severe)	12,773	4,830	4,633	22,236
Anorexia/Bulimia	27	117	222	366
Asperger's Syndrome	737	371	265	1,373
Asthma	49,976	20,445	16,016	86,437
Autism	3,472	984	934	5,930
Cancer	335	126	217	678
Cardiac condition	2,201	1,089	1,300	4,590
Cerebral Palsy	1,234	522	583	2,339
Cystic Fibrosis	145	76	75	296
Cytomegalovirus	10	5	11	26
Diabetes Type I	981	904	1,320	3,205
Diabetes Type II	356	424	727	1,507
Down Syndrome	708	235	329	1,272
Gastrointestinal disorders	2,163	1,066	1,189	4,418
Genetic conditions	1,085	387	371	1,843
Hearing Impaired	1,874	800	713	3,387
Hemophilia/Bleeding Disorder	337	164	172	673
Hepatitis B	12	10	6	28
Hepatitis C	2	7	4	13
Human Immunodeficiency Virus (HIV)	18	18	19	55
Hypertension	263	282	607	1,152
Hypo/Hyperthyroidism	172	156	202	530
Migraine headaches	2,759	2,494	3,216	8,469
Multiple Sclerosis	16	21	30	67
Muscular Dystrophy	94	55	50	199
Neuromuscular Condition	416	179	243	838
Orthopedic Disability (permanent)	1,135	577	767	2,479
Psychiatric Disorder	2,833	2,773	2,894	8,500
Renal Condition	345	437	763	1,545
Rheumatoid Arthritis	263	168	188	619
Seizure Disorder	4,432	1,797	1,883	8,112
Sickle Cell Disease	640	283	294	1,217
Spina Bifida	224	121	127	472
Substance Abuse	4	259	1,078	1,341
Traumatic Brain Injury	203	108	143	454
Visually Impaired	1,522	737	591	2,850
Other (total)	1,898	965	1,026	232,991
Total	124,372	58,309	54,199	465,982

Appendix B: Reported Injuries in North Carolina Public Schools Requiring EMS Response or Immediate Care by Physician/Dentist AND Loss of 1/2 Day or More of School, School Year 2007-2008

Type of Injury	Bus	Hallway	Classroom	Playground	PE Class	Shop	Restroom	Lunchroom	Other	Total #	Total %
Abdominal/Internal injuries	5	15	79	78	48	0	3	4	20	252	1%
Anaphylaxis	0	6	120	43	11	0	1	42	22	245	1%
Back Injuries	10	25	49	131	125	0	3	3	37	383	2%
Dental Injury	20	40	153	333	188	5	11	16	38	804	4%
Drug Overdose	13	10	80	3	5	0	13	15	50	189	1%
Eye Injuries	12	65	280	290	192	26	8	21	26	920	4%
Fracture	10	129	141	1,208	719	9	15	12	203	2,446	11%
Head Injuries	41	170	247	905	454	13	61	42	125	2,058	9%
Heat-Related Emergency	2	2	32	89	87	2	1	4	34	253	1%
Laceration	46	176	539	848	450	117	70	50	184	2,480	11%
Neck Injuries	5	5	10	59	44	2	3	1	12	141	1%
Psychiatric Emergency	6	45	380	22	9	0	10	10	104	586	3%
Respiratory Emergency	53	56	744	291	283	0	7	19	70	1,523	7%
Seizure	40	92	728	47	48	4	14	34	53	1,060	5%
Sprain or Strain	47	272	310	1,493	1,867	27	26	35	272	4,349	19%
Other	35	133	380	277	299	15	30	38	3,887	5,034	22%
Total #	345	1,241	4,272	6,117	4,829	220	276	346	5,137	22,738	100%
Total %	2%	5%	19%	27%	21%	1%	1%	2%	23%	100%	

Appendix C: North Carolina School Nurse-to-Student Ratio by Local Education Agency, School Year 2007 - 2008

County/LEA Name	Ratio (Nurse:Student)	County/LEA Name	Ratio (Nurse:Student)
Alamance-Burlington	1,098	Forsyth	2,051
Alexander	1,037	Franklin	1,082
Alleghany	788	Gaston	1,534
Anson +	454	Gates	833
Ashe	1,079	Graham +	488
Avery	1,116	Granville	1,766
Beaufort	1,769	Greene +	479
Bertie +	500	Guilford	2,233
Bladen	1,154	Halifax +	559
Brunswick	1,100	Roanoke Rapids City +	728
Buncombe	1,492	Weldon City +	506
Asheville City	921	Harnett	1,963
Burke	1,079	Haywood	875
Cabarrus	978	Henderson	1,841
Kannapolis City +	706	Hertford +	646
Caldwell	1,115	Hoke	818
Camden +	633	Hyde +	316
Carteret	1,198	Iredell-Statesville	1,415
Caswell	1,054	Mooresville City	1,077
Catawba	1,028	Jackson	1,045
Hickory City	906	Johnston	2,246
Newton Conover +	706	Jones +	613
Chatham	1,323	Lee	1,136
Cherokee +	512	Lenoir	1,591
Chowan +	600	Lincoln	1,515
Clay +	678	Macon	864
Cleveland	1,382	Madison	1,295
Columbus	1,125	Martin +	607
Whiteville City Schools +	658	McDowell	882
Craven +	727	Mecklenburg	1,082
Cumberland	2,081	Mitchell	1,082
Currituck +	671	Montgomery	885
Dare +	475	Moore	1,756
Davidson	3,412	Nash County	1,016
Lexington City Schools	791	New Hanover +	687
Thomasville City Schools +	645	Northampton +	675
Davie	745	Onslow	1,161
Duplin +	633	Orange +	575
Durham	1,470	Chapel Hill/Carrboro +	676
Edgecombe	1,473	Pamlico +	293

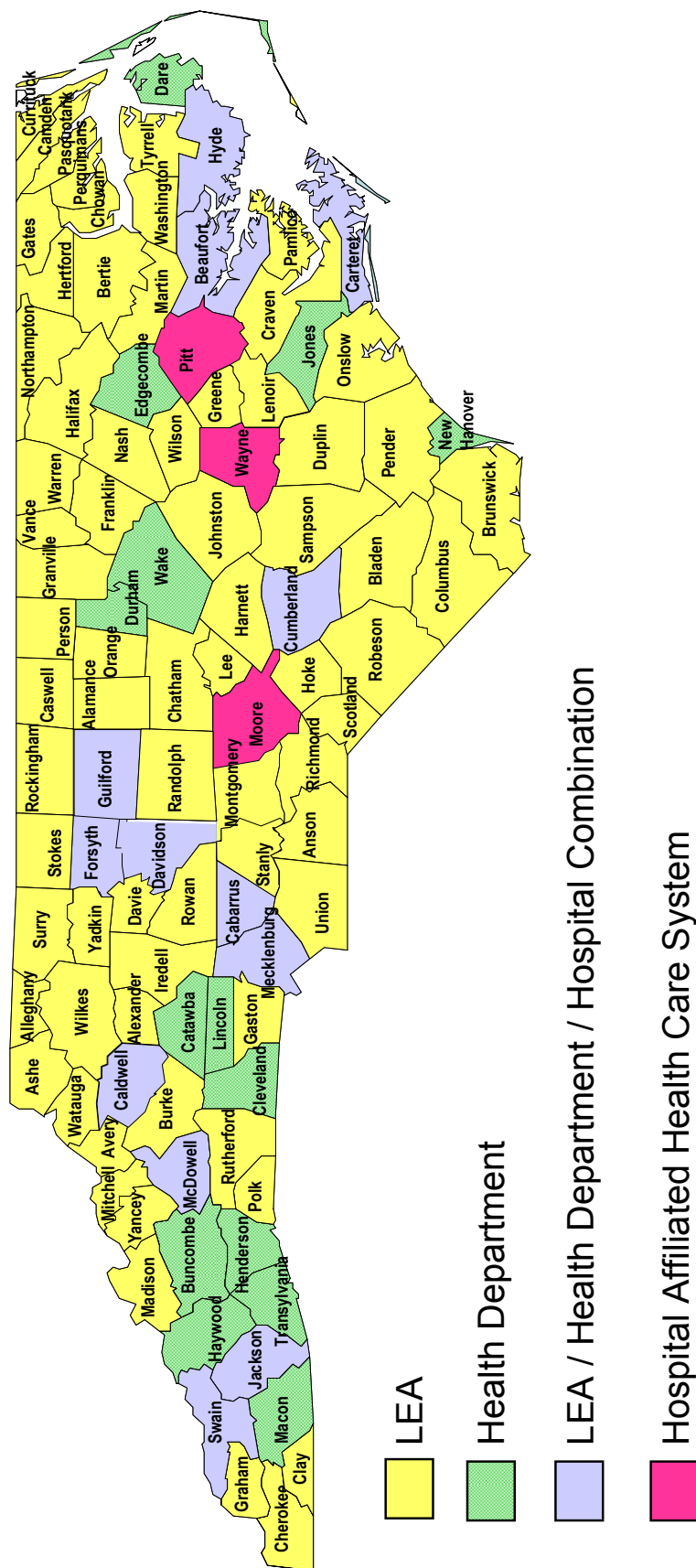
+ LEAs at or below 1:750 school nurse to student ratio

Appendix C: North Carolina School Nurse-to-Student Ratio by Local Education Agency, School Year 2007 - 2008

County/LEA Name	Ratio (Nurse:Student)	County/LEA Name	Ratio (Nurse:Student)
Pasquotank	1,007	Surry County	1,082
Pender	1,033	Elkin City Schools	861
Perquimans +	584	Mt. Airy City Schools +	544
Person	914	Swain +	307
Pitt	1,412	Transylvania	1,870
Polk	1,229	Tyrrell +	558
Randolph	2,085	Union	1,679
Asheboro City	891	Vance +	686
Richmond +	685	Wake	2,378
Robeson	1,071	Warren +	671
Rockingham	1,765	Washington +	677
Rowan-Salisbury	1,474	Watauga	1,118
Rutherford	1,589	Wayne	1,171
Sampson	1,237	Wilkes	1,175
Clinton City	767	Wilson	2,071
Scotland +	512	Yadkin	1,010
Stanly	1,568	Yancey +	615
Stokes	1,438	NORTH CAROLINA	1,225

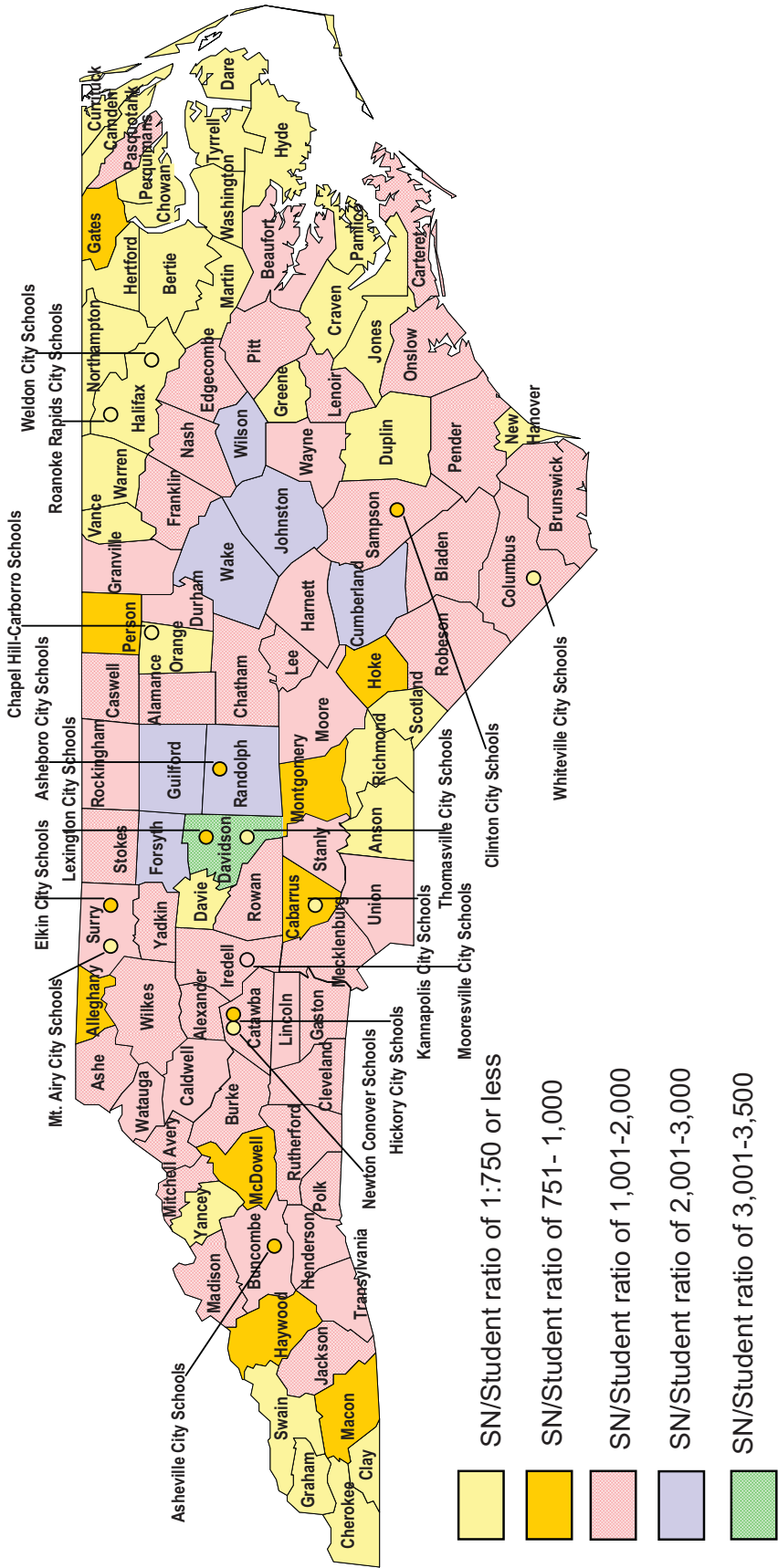
* LEAs at or below 1:750 school nurse to student ratio

Administrative Responsibility for School Nursing Services July 2008



Updated: August 2008 Source: NC Annual Survey of School Health Services • NC DHHS

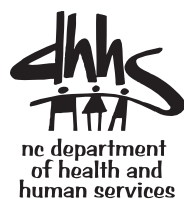
School Nurse/Student Ratio SY 2007 - 2008



Note: The standard school nurse to student ratio of 1:750 has been adopted by the N.C. Public Health Task Force, the N.C. Department of Public Instruction and the N.C. Division of Public Health and is based on recommendations made by the American Academy of Pediatrics, the Centers for Disease Control and Prevention, and the National Association of School Nurses.

Source: NC Annual Survey of School Health Services NC DHHS

August 2008



State of North Carolina | Beverly Eaves Perdue, Governor
Department of Health and Human Services | Lanier M. Cansler, Secretary
Division of Public Health | Jeffrey P. Engel, M.D., State Health Director
Women's and Children's Health Section
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